REMARKS

Claims 1-6, 16, 17, and 32-39 are pending. Claims 1-6 and 36-38 are amended herein, without prejudice. Favorable reconsideration in light of the amendments and remarks which follow is respectfully requested.

1. Claim Objections

Claim 2 is objected to as containing a typographical error. The claim has been amended herein to correct the typographical error.

2. 35 U.S.C. §112 Rejections

Claims 2 and 4 are rejected under 35 U.S.C. §112, second paragraph. In particular, the recitation "is less than a desired time period for re-ignition" is pointed to in connection with the "4 seconds or less" language appearing in claim 1. Applicants note that this language appears to be in claims 3 and 5 and, thus, it is believed that the rejection is in connection with claims 3 and 5 rather than 2 and 4. In response, claims 3 and 5 are amended to recite the language in claim 1. Reconsideration and withdrawal of the rejection is respectfully requested in view thereof.

3. 35 U.S.C. §103 Rejections

Claims 1-6, 16, 17 and 32-39 are rejected under 35 U.S.C. §103(a) over US 5,725,368 (Arensmeier), US 5,233,166 (Maeda et al), US 5,997,998 (Sawamura), and US 5,899,684 (McCoy et al). Applicants respectfully traverse.

According to Arensmeier, a system is provided for applying power to an electrical resistance igniter so as to reach ignition temperature, followed by powering the igniter so as to maintain the igniter at ignition temperature for an additional time period. In particular, as specified by Arensmeier:

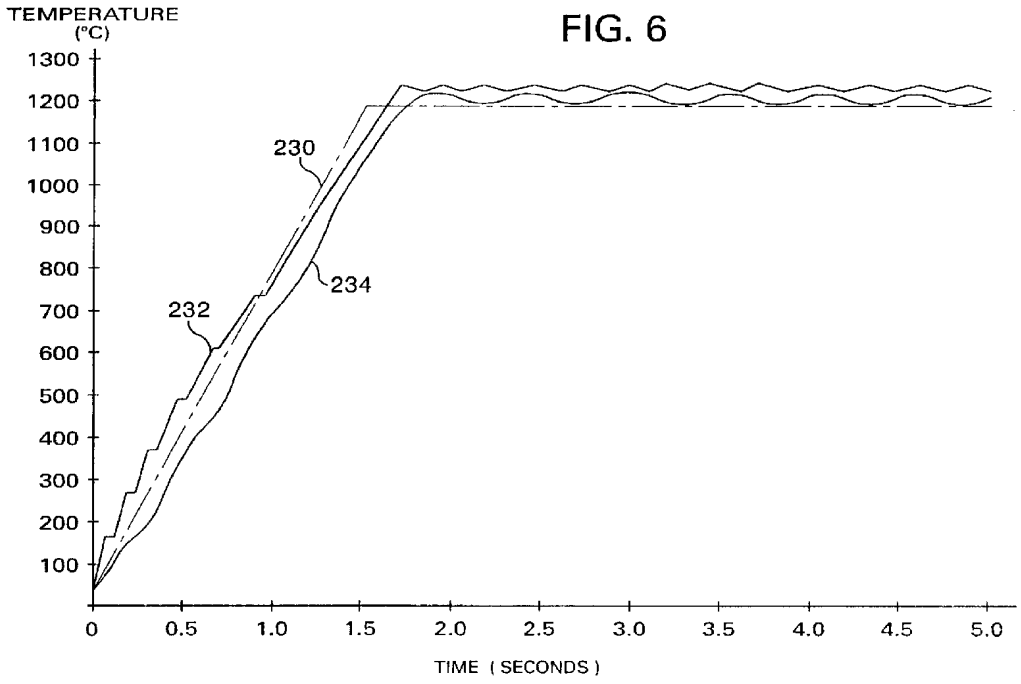
> In accordance with the invention, a system is provided for applying power to an electrical resistance igniter for energizing the igniter to ignition temperature within approximately 2 seconds and for maintaining the igniter at ignition temperature for an additional time period * * * (col. 2, lines 27-31)

The selected firing sequence is effective to cause igniter 12 to be heated to approximately 1200° C in approximately 2 seconds. Since ignition temperature is approximately 1100° C, igniter 12 should ignite the gas at burner 20 within the 2 second period. The selected firing sequence is effective to maintain the temperature of igniter 12 at 1200°C for approximately 3 additional seconds. If ignition has not occurred at the end of the 3 additional seconds, gas valve 22 is closed and triac Q1 is turned off. (col. 5, lines 1-5)

* * * Such an irregular firing pattern results in the application of time-varying power to igniter 12. Such time-varying power enables igniter 12 to attain ignition temperature within 2 seconds, to remain at ignition temperature for several more seconds * * * (col. 5, lines 14-16)

Referring to FIG. 6, indicated by curve 230 is the temperature setpoint curve generated in logic step 224. As shown therein, curve 230 is a straight line between approximately 25° C at 0 seconds and 1200° C at 1.5 seconds, and then is constant at 1200° C from 1.5 seconds to 5 seconds. * * *

FIG. 6



Thus, it is clear that Arensmeier describes a system that powers an igniter such that once ignition temperature is reached, the system continues to power the igniter so as to maintain the igniter **at that ignition temperature.** This is in contrast to Applicants' claims which recite a system in which voltage and current applied to the igniter are controlled so the electrical resistance igniter is maintained at a **temperature less than the gas ignition temperature** but above room temperature.

Further, it is respectfully submitted that Arensmeier is not at all related to nor does it teach or suggest anything with respect to a system for controlling a re-ignition time period after a loss of flame has been detected. Rather, Arensmeier only describes a system that controls initial ignition.

Maeda and Sawamura are cited for allegedly describing igniters that are capable of quickly reaching high temperatures. It is noted that Maeda and Sawamura aren't at all related to nor do they suggest anything with respect to a control system, particularly a control system that controls the temperature of an igniter over time so as to provide ignition and reignition as taught by Applicants. Thus, even if Maeda and/or Sawamura were combined with Arensmeier, the above-noted deficiencies in Arensmeier still exist. In particular, Applicants' control system which controls application of voltage and current to the igniter following successful ignition of the gas such that the electrical resistance igniter is maintained at a temperature less than the gas ignition temperature but above room temperature is not taught or at all suggested. Further, Applicants' control system which controls application of voltage and current to the igniter such that the specified reignition time period after a loss of flame has been detected is not taught or at all suggested. Rather, this teaching comes purely from Applicants' disclosure.

McCoy is further cited for describing a system for controlling a fuel oil burner. According to McCoy, a system is configured such that after ignition is attempted, if a flame is not detected then the device is completely de-energized and "turn OFF" or "Shutdown" occurs (e.g. see Fig. 4). As specified by McCoy, the system:

> * * * further includes a trial ignition period during which time a blower motor of the split-phase type, and having a main winding and an auxiliary start winding, provides both air and fuel to the combustion chamber. If a flame is not detected in less than one second, the device is de-energized and starting must be retried. (col. 1, lines 21-26)

Further, according to McCoy, if a flame is detected, then "Turn OFF is delayed indefinitely to point "E" (when the flame is lost, Fig. 5) and at that point, when the flam is lost, the device is also completely de-energized and "turn OFF" or "Shutdown" occurs (see, e.g. 13-15). Thus, McCoy only describes a system designed such that if a flame is not detected at any point (either if initial ignition is unsuccessful, or if after successful ignition the flame is lost) the device is completely de-energized prior to restarting.

It is respectfully submitted that McCoy clearly does not teach or suggest Applicants' claimed system which controls the voltage and current applied to the igniter such that if a loss of flame has been detected, reignition is accomplished within 4 seconds of the detection of a loss of flame. Further, it is respectfully submitted that nowhere does McCoy describe a system wherein after successful ignition, the system controls voltage and current applied to the igniter so the electrical resistance igniter is maintained at a temperature less than the gas ignition temperature but above room temperature.

In view thereof, it is respectfully submitted that claims 1, 6 and 38 are patentable over Arensmeier, Maeda, Sawamura and McCoy. Claims 2-5, 16, 17, 32-37 and 39 depend from claims 1, 6 and 38, and thus also are patentable over Arensmeier, Maeda, Sawamura and McCoy. Reconsideration and withdrawal of the rejections is respectfully requested in view thereof.

4. Double Patenting

Claims 1-6, 16-17 and 32-39 are rejected on the ground of nonstatutory obviousness-type double patenting over claims 1-36 of U.S. 7,148,454 (Chodacki et al) in view of Maeda, Sawamura and McCoy.

Applicants will address the rejection when the application is otherwise in condition for allowance.

CONCLUSION

It is respectfully submitted that the subject application is in a condition for allowance. Early and favorable action is requested. If for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge Deposit Account No. 04-1105.

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Respectfully submitted,

By: /Lisa Swiszcz/
Lisa Swiszcz
Registration No.: 44,368
EDWARDS ANGELL PALMER & DODGE LLP
P.O. Box 55874
Boston, Massachusetts 02205
(617) 517-5557
Attorneys/Agents For Applicant